Amendments to the Claims

Please add new Claims 31-47 and amend Claims 1, 3, 27, and 29 as follows:

1. (Currently Amended) A method for coding an input object, where said input object mask has a plurality of regions, said method comprising the steps of:

(a) assigning at least one symbol to each of the plurality of regions, wherein each of the plurality of regions comprises a $2^N x 2^N$ block of pixels, N is equal to or greater than a desired number of object mask layers, L, and:

each of the plurality of regions having only pixels with a first mask value is assigned a first symbol,

each of the plurality of regions having only pixels with a second mask value is assigned a second symbol, said second symbol being different than said first symbol, and

each of the plurality of regions having pixels with said first mask value and said second mask value is assigned a third symbol, said third symbol being different than said first and said second symbols;

(b) coding said assigned symbols of the input object mask, wherein each of the plurality of regions assigned said first symbol or said second symbol is assigned to a first class, and each of the plurality of regions assigned said third symbol is assigned to a second class,

(c) utilizing a first binary probability model to encode each of said plurality of classes, and utilizing a second binary probability model to further encode said first class;

(d[[c]]) decomposing said input object mask into a plurality of object mask layers of different spatial resolution, wherein each object mask layer is identified as Λ_n, $0 \le n \le L$, Λ_0 is the full resolution object mask layer, and Λ_L is the base mask layer;

(e[[d]]) coding, utilizing an encoder, [[a]]said base object mask layer Λ_L, ~~of said plurality of object mask layers~~ wherein each of said plurality of regions assigned to said second class within said base object mask layer Λ_L is encoded in a raster scan order; and

(f[[e]]) coding, utilizing said encoder, a next higher layer of said plurality of object mask layers in accordance with information from a lower object mask layer Λ_{n+1}.

2. (Original) The method of claim 1, wherein said coding step (b) codes said assigned symbols contextually in accordance with neighboring regions.

3. (Currently Amended) The method of claim 2, wherein said coding step (b) ~~coding~~ codes said assigned symbols contextually in accordance with:

$$\text{Context}_0 = S_3 * 27 + S_2 * 9 + S_1 * 3 + S_0,$$

where context_0 is a context for an assigned symbol for a current region, M_{ij}, to be coded, I and j are respectively row index and column index, and wherein said neighboring regions are defined as $S_3 = M_{(i-j)(j-1)}$, $S_2 = M_{(i-1)j}$, $S_1 = M_{(i-j)(j+1)}$, and $S_0 = M_{i(j-1)}$.

4-26. (Cancelled)

27. (Currently Amended) A computer-readable medium having stored thereon a plurality of instructions, the plurality of instructions which, when executed by a processor, cause the processor to perform the steps of a method for coding an input object mask, where said input object mask has a plurality of regions, said method comprising the steps of:

(a) assigning at least one symbol to each of the plurality of regions, wherein each of the plurality of regions comprises a 2^Nx2^N block of pixels, N is equal to or greater than a desired number of object mask layers, L, and:

each of the plurality of regions having only pixels with a first mask value is assigned a first symbol,

each of the plurality of regions having only pixels with a second mask value is assigned a second symbol, said second symbol being different than said first symbol, and

each of the plurality of regions having pixels with said first mask value and said second mask value is assigned a third symbol, said third symbol being different than said first and said second symbols;

(b) coding said assigned symbols of the input object mask, wherein each of the plurality of regions assigned said first symbol or said second symbol is assigned to a first class, and each of the plurality of regions assigned said third symbol is assigned to a second class;

(c) utilizing a first binary probability model to encode each of said plurality of classes, and utilizing a second binary probability model to further encode said first class;

(d[[c]]) decomposing said input object mask into a plurality of object mask layers of different spatial resolution, wherein each object mask layer is identified as Λ_n, $0 \leq n \leq L$, Λ_0 is the full resolution object mask layer, and Λ_L is the base mask layer;

(e[[d]]) coding said[[a]] base object mask layer Λ_L, ~~of said plurality of object mask layers~~wherein each of said plurality of regions assigned to said second class within said base object mask layer Λ_L is encoded in a raster scan order; and

(f[[e]]) coding a next higher layer of said plurality of object mask layers in accordance with information from a lower object mask layer Λ_{n+1}.

28. (Original) The computer-readable medium of claim 27, wherein said coding step (b) codes said assigned symbols contextually in accordance with neighboring regions.

29. (Currently Amended) An apparatus for coding an input object mask, where said input object mask has a plurality of regions, said apparatus comprising:

(a) means for assigning at least one symbol to each of the plurality of regions, wherein each of the plurality of regions comprises a $2^N x 2^N$ block of pixels, N is equal to or greater than a desired number of object mask layers, L, and:

each of the plurality of regions having only pixels with a first mask value is assigned a first symbol,

each of the plurality of regions having only pixels with a second mask value is assigned a second symbol, said second symbol being different than said first symbol, and

each of the plurality of regions having pixels with said first mask value and said second mask value is assigned a third symbol, said third symbol being different than said first and said second symbols;

(b) a first means for coding said assigned symbols of the input object mask, wherein each of the plurality of regions assigned said first symbol or said second symbol is assigned to a first class, and each of the plurality of regions assigned said third symbol is assigned to a second class;

(c) a first means for encoding each of said plurality of classes, said first means for encoding utilizing a first binary probability model;

(d) a second means for further encoding said first class, said second means for encoding further utilizing a second binary probability model;

(e) means for decomposing said input object mask into a plurality of object mask layers of different spatial resolution, wherein each object mask layer is identified as Λ_n, $0 \leq n \leq L$, Λ_0 is the full resolution object mask layer, and Λ_L is the base mask layer;

(f) a second means for coding said[[a]] base object mask layer Λ_L of said plurality of object mask layers, wherein each of said plurality of regions assigned to said second class within said base object mask layer Λ_L is encoded in a raster scan order; and

(g) a third means for coding a next higher layer of said plurality of object mask layers in accordance with information from a lower object mask layer $\underline{\Lambda_{n+1}}$.

30. (Original) The apparatus of Claim 29, wherein said first coding means codes said assigned symbols contextually in accordance with neighboring regions.

31. (New) The method of claim 1, further comprising zero-padding the object mask to form said $2^N x 2^N$ blocks of pixels when said object mask is not a multiple of 2^N pixels.

32. (New) The method of Claim 1, wherein said first class of regions comprises a first type and a second type, wherein said first type comprising said regions assigned said first symbol, and said second type comprising said regions assigned said second symbol.

33. (New) The method of Claim 1, further comprising proceeding to a next symbol for a next one of said plurality of regions assigned to said second class.

34. (New) The computer-readable medium of claim 28, wherein said coding step (b) codes said assigned symbols contextually in accordance with:

$$\text{Context}_0 = S_3 * 27 + S_2 * 9 + S_1 * 3 + S_0,$$

where context_0 is a context for an assigned symbol for a current region, M_{ij}, to be coded, I and j are respectively row index and column index, and wherein said neighboring regions are defined as $S_3 = M_{(i-j)(j-1)}$, $S_2 = M_{(i-1)j}$, $S_1 = M_{(i-j)(j+1)}$, and $S_0 = M_{i(j-1)}$.

35. (New) The computer-readable medium of claim 27, wherein said method further comprises zero-padding the object mask to form said $2^N x 2^N$ blocks of pixels when said object mask is not a multiple of 2^N pixels.

36. (New) The computer-readable medium of Claim 27, wherein said first class of regions comprises a first type and a second type, wherein said first type comprising said regions

assigned said first symbol, and said second type comprising said regions assigned said second symbol.

37. (New) The computer-readable medium of Claim 27, further comprising proceeding to a next symbol for a next one of said plurality of regions assigned to said second class.

38. (New) The apparatus of claim 30, wherein said coding step (b) codes said assigned symbols contextually in accordance with:

$$\text{Context}_0 = S_3 * 27 + S_2 * 9 + S_1 * 3 + S_0,$$

where context_0 is a context for an assigned symbol for a current region, M_{ij}, to be coded, I and j are respectively row index and column index, and wherein said neighboring regions are defined as $S_3 = M_{(i-j)(j-1)}$, $S_2 = M_{(i-1)j}$, $S_1 = M_{(i-j)(j+1)}$, and $S_0 = M_{i(j-1)}$.

39. (New) An apparatus for coding an input object mask, where said input object mask has a plurality of regions, each of the plurality of regions comprises a $2^N x 2^N$ block of pixels, N is equal to or greater than a desired number of object mask layers, L, and said apparatus comprising:

an encoder that:

(a) assigns a first symbol to each of the plurality of regions having only pixels with a first mask value, a second symbol to each of the plurality of regions having only pixels with a second mask value, and a third symbol to each of the plurality of regions having pixels with said first mask value and said second mask value, said second symbol being different than said first symbol, and said third symbol being different than said first and said second symbols;

(b) codes said assigned symbols of the input object mask, wherein each of the plurality of regions assigned said first symbol or said second symbol is

assigned to a first class, and each of the plurality of regions assigned said third symbol is assigned to a second class;

(c) encodes each of said plurality of classes utilizing a first binary probability model;

(d) further encodes said first class utilizing a second binary probability model;

(e) decomposes said input object mask into a plurality of object mask layers of different spatial resolution, wherein each object mask layer is identified as Λ_n, $0 \leq n \leq L$, Λ_0 is the full resolution object mask layer, and Λ_L is the base mask layer;

(f) codes said base object mask layer Λ_L of said plurality of object mask layers;

(g) encodes each of said plurality of regions assigned to said second class within said base object mask layer Λ_L in a raster scan order; and

(h) codes a next higher layer of said plurality of object mask layers in accordance with information from a lower object mask layer Λ_{n+1};

a multiplexer, communicatively coupled to said encoder and configured to produce a transport stream; and

a transmitter, communicatively coupled to said transport stream and configured to transmit to a communication channel.

40. (New) The apparatus of Claim 39, wherein said encoder further codes said assigned symbols contextually in accordance with neighboring regions.

41. (New) The apparatus of claim 39, further configured to zero-pad the object mask to form said 2^Nx2^N blocks of pixels when said object mask is not a multiple of 2^N pixels.

42. (New) The apparatus of Claim 39, wherein said first class of regions comprises a first type and a second type, said first type comprising said regions assigned said first symbol, and said second type comprising said regions assigned said second symbol.

43. (New) The apparatus of Claim 39, wherein said encoder proceeds to a next symbol for a next one of said plurality of regions for each mode symbol assigned to said second class.

44. (New) The apparatus of claim 40, wherein said encoder codes said assigned symbols contextually in accordance with:

$$\text{Context}_0 = S_3 * 27 + S_2 * 9 + S_1 * 3 + S_0,$$

where context_0 is a context for an assigned symbol for a current region, M_{ij}, to be coded, I and j are respectively row index and column index, and wherein said neighboring regions are defined as $S_3 = M_{(i-j)(j-1)}$, $S_2 = M_{(i-1)j}$, $S_1 = M_{(i-j)(j+1)}$, and $S_0 = M_{i(j-1)}$.

45. (New) The apparatus of Claim 39, further comprising a demultiplexer, communicatively coupled to said communication channel and configured to demultiplex a signal from said communication channel.

46. (New) The apparatus of Claim 45, further comprising a decoder, communicatively coupled to said demultiplexer and configured to decode a demultiplexed signal from said communication channel.

47. (New) The apparatus of claim 29, further comprising a means for zero-padding the object mask to form said $2^N x 2^N$ blocks of pixels when said object mask is not a multiple of 2^N pixels.

48. (New) The apparatus of Claim 29, wherein said first class of regions comprises a first type and a second type, said first type comprising said regions assigned said first symbol, and said second type comprising said regions assigned said second symbol.

49. (New) The apparatus of Claim 29, further comprising a means for proceeding to a next symbol for a next one of said plurality of regions assigned to said second class.